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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/768,880	01/29/2004	Bernhard Schmitt	1184-09	7302

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THE MAXHAM FIRM
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EXAMINER	
VERDIER, CHRISTOPHER M	

ART UNIT	PAPER NUMBER
3745	

DATE MAILED: 02/27/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/768,880	SCHMITT, BERNHARD	
	Examiner	Art Unit	
	Christopher Verdier	3745	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-21 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-21 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on 29 January 2004 is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date 9-7-04.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

Power of Attorney

The Power of Attorney is defective, because the inventor Bernhard Schmitt has signed indicating that he is the assignee of record of the entire interest, and that a certificate under 37 CFR 3.73(b) is enclosed. This is incorrect, because inventor Schmitt is not the assignee, and no certificate under 37 CFR 3.73(b) has been enclosed. The assignee is GAT GESELLSCHAFT FUR ANTRIEBSTECHNIK MBH.

Specification

The disclosure is objected to because of the following informalities: Appropriate correction is required.

In paragraph 27, line 8, "12" should be changed to -- 14 --.

The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required:

Claim 3, which recites that the radii of curvature of the radially inward portions are at least 50%, or preferably 100%, greater than the radii of curvature of the corresponding radially outer portions of the front faces and back faces, respectively, has no antecedent basis in the specification.

Claim 4, which recites that radius of curvature of a radially inward portion is no more than about four times the radius of curvature of the corresponding radially outer portion, has no antecedent basis in the specification.

Claim 5, which recites that the radius of curvature of the radially outer portion of the back face is between about 5% and 50% greater than the radius of curvature of the radially outer portion of the front face, has no antecedent basis in the specification.

Claim 7, which recites that the front face and back face respectively have essentially two different radii of curvature, has no antecedent basis in the specification.

Claim 9, which recites that axial length of the turbine blades is at least 65% of the radial extent of the turbine blades, has no antecedent basis in the specification.

Claim 11, which recites that the axial length of the turbine blades is at most 80% of the radial extent of the blades, has no antecedent basis in the specification.

Claim 12, which recites that the axial length of the turbine blades is approximately 70% +/- 5% of the radial extent of the turbine blades, has no antecedent basis in the specification.

Claim 13, which recites that the axial length of the turbine blades is approximately 70%+/- 5% of the radial extent of the turbine blades, has no antecedent basis in the specification.

Claim 14, line 16, which recites that the connecting line is inclined by 2 to 15 degrees, has no antecedent basis in the specification.

Claim 15, line 4, which recites that the rounding radius of the inner edge is greater than 0.01 mm, has no antecedent basis in the specification.

Claim 17, which recites that the blade ring further comprises an internal radius between 20 mm and 24 mm, preferably approximately 22 mm, has no antecedent basis in the specification.

Claim 18, which recites that the blade ring further comprises an external radius between 25 mm and 60 mm, in particular, approximately 27.5 mm, has no antecedent basis in the specification.

Applicant should carefully review all of the claims in order to verify that all limitations set forth in the claims have antecedent basis in the specification as required by 37 CFR 1.75(d)(1) and MPEP § 608.01(o).

Claim Objections

Claims 1-21 are objected to because of the following informalities: Appropriate correction is required.

In claim 1, line 1, "the" should be deleted.

In claim 2, line 4, "blades" should be change to -- blade --.

In claim 14, line 1, "the" should be deleted.

In claim 14, line 13, --edge -- should be inserted after "inward".

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-21 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In claim 1, line 1, "particularly" renders the claim indefinite because it is unclear

whether the limitations following the phrase are part of the claimed invention. See MPEP § 2173.05(d). Claim 3, line 2, which recites "or preferably 100%", is indefinite. A broad range or limitation together with a narrow range or limitation that falls within the broad range or limitation (in the same claim) is considered indefinite, since the resulting claim does not clearly set forth the metes and bounds of the patent protection desired. See MPEP § 2173.05(c). Note the explanation given by the Board of Patent Appeals and Interferences in *Ex parte Wu*, 10 USPQ2d 2031, 2033 (Bd. Pat. App. & Inter. 1989), as to where broad language is followed by "such as" and then narrow language. The Board stated that this can render a claim indefinite by raising a question or doubt as to whether the feature introduced by such language is (a) merely exemplary of the remainder of the claim, and therefore not required, or (b) a required feature of the claims. Note also, for example, the decisions of *Ex parte Steigewald*, 131 USPQ 74 (Bd. App. 1961); *Ex parte Hall*, 83 USPQ 38 (Bd. App. 1948); and *Ex parte Hasche*, 86 USPQ 481 (Bd. App. 1949). In the present instance, claim 3 recites the broad recitation of "at least 50%", and the claim also recites "or preferably 100%" which is the narrower statement of the range/limitation. In claim 6, line 3, "preferably by 0 to 10%" is indefinite for the same reason. In claim 8, line 2, "preferably at least 65%" is indefinite for the same reason. In claim 14, line 1, "particularly" renders the claim indefinite because it is unclear whether the limitations following the phrase are part of the claimed invention. See MPEP § 2173.05(d). In claim 14, lines 16-17, "preferably by 5 degrees to 12 degrees, and in particular by approximately 8 degrees +/- 1 degree" is indefinite because it contains a broad range or limitation together with a narrow range or limitation that falls within the broad range or limitation in the same claim, as set forth above. In claim 15, line 3, "preferably less than 0.05 mm" is indefinite for the same reason. In claim 15,

line 5, "preferably less than 0.2 mm" is indefinite for the same reason. In claim 16, line 2, "preferably 12 degrees" is indefinite for the same reason. In claim 17, line 2, "preferably approximately 22 mm" is indefinite for the same reason. In claim 18, line 2, "preferably approximately 27.5 mm" is indefinite for the same reason. In claim 19, line 3, "in particular, between 30 degrees and 35 degrees" is indefinite for the same reason. In claim 19, lines 4-5, "in particular, between 70 degrees +/- 5 degrees" is indefinite for the same reason. In claim 20, line 3, "in particular, is 40 degrees +/- 2 degrees" is indefinite for the same reason. In claim 20, lines 4-5, "in particular, is 115 degrees +/- 5 degrees" is indefinite for the same reason.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-3 and 21, as far as they are definite and understood, are rejected under 35 U.S.C. 102(b) as being anticipated by Bevans 289,958. Note the turbine wheel comprising a carrier plate b, c formed as a circular disk or ring, the plate having a central axis l and configured for mounting so as to be rotatable about the axis, turbine blades a disposed on the carrier plate in circular formation and curved in a direction perpendicular to the axis, the turbine blades comprising an unnumbered front face, and an unnumbered back face, mounted so that the front and back faces are axially parallel, with each of the faces having radially outer portions and

radially inward portions with radii of curvature, such that at least portions of the front face have a lesser radius of curvature than the back face, and the radially outer portions of the front face and of the back face have a lesser radius of curvature than the radially more inward portions of the front face and of the back face. The radially inward portions of the front faces and of the back faces, respectively comprise at least 30% of the radial extent of a turbine blade, while the radially outer portions of the front faces and back faces, respectively comprise at least 30% of the radial extent of the turbine blades. The radii of curvature of the radially inward portions are at least 50% greater than the radii of curvature of the corresponding radially outer portions of the front faces and back faces, respectively. The transition of the radii of curvature from the radially inward to the radially outer portion is in each case inherently located on a line connecting the centers of curvature of the respective radially inward and radially outer portion. The recitation in claim 1, lines 1-2 of "for driving rapidly rotating tools, particularly for the rotating disks and/or domes of paint-spraying apparatus" is a recitation of intended use. A recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. Additionally, these limitations have not been given patentable weight because the recitation occurs in the preamble. A preamble is generally not accorded any patentable weight where it merely recites the purpose of a process or the intended use of a structure, and where the body of the claim does not depend on the preamble for completeness but, instead, the process steps or structural limitations are able to stand alone. See *In re Hirao*, 535 F.2d 67, 190 USPQ 15 (CCPA 1976) and *Kropa v. Robie*, 187 F.2d 150, 152, 88 USPQ 478, 481 (CCPA 1951).

Claims 1-2, 8-10, and 21, as far as they are definite and understood, are rejected under 35 U.S.C. 102(b) as being anticipated by Fujii 3,140,042. Note the turbine wheel comprising a carrier plate 20, 21 formed as a circular disk or ring, the plate having a central axis near 22 and configured for mounting so as to be rotatable about the axis, turbine blades 11 disposed on the carrier plate in circular formation and curved in a direction perpendicular to the axis, the turbine blades comprising a front face 17, and a back face 14, mounted so that the front and back faces are axially parallel, with each of the faces having radially outer portions 18, 15 and radially inward portions 19, 16 with radii of curvature, such that at least portions of the front face have a lesser radius of curvature R3 than the back face at R2, and the radially outer portions of the front face at R3 and of the back face at R1 have a lesser radius of curvature than the radially more inward portions of the front face at R2 and of the back face at R4. The radially inward portions of the front faces and of the back faces, respectively comprise at least 30% of the radial extent of a turbine blade, while the radially outer portions of the front faces and back faces, respectively comprise at least 30% of the radial extent of the turbine blades, as indicated by distances l1, l2, and l3. The length to radius ratio of the turbine blades is 75mm/80 mm, which is 93.75%, and therefore the axial length of the turbine blades is at least 60 %, at least 65%, and at most 100% of the radial extent of the turbine blades. The transition of the radii of curvature from the radially inward to the radially outer portion is in each case located on a line connecting the centers of curvature of the respective radially inward and radially outer portion. The recitation in claim 1, lines 1-2 of "for driving rapidly rotating tools, particularly for the rotating disks and/or domes of paint-spraying apparatus" is a recitation of intended use as set forth above. Additionally, these

limitations have not been given patentable weight because the recitation occurs in the preamble, as set forth above. Note that although Fujii is directed towards centrifugal fan blades, these blades are structurally and functionally equivalent to the claimed turbine blades and will function as turbine blades when driven by working fluid. Note also that the designation of the blade radially outer portion and the blade radially inward portion depends on the viewing perspective in the drawing figures. Looking from the periphery of the carrier plate 21 in figure 5 towards the central axis 22, the portion adjacent 13 (see figure 1) is considered to be the blade radially inward portion while the portion adjacent 12 (see figure 1) is considered to be the blade radially outward portion.

Claims 1-4 and 21, as far as they are definite and understood, are rejected under 35 U.S.C. 102(b) as being anticipated by Saeki 6,007,300 (figure 8). Note the turbine wheel comprising a carrier plate 11 (see figure 12) formed as a circular disk or ring, the plate having an unnumbered central axis and configured for mounting so as to be rotatable about the axis, turbine blades 4/5 disposed on the carrier plate in circular formation and curved in a direction perpendicular to the axis, the turbine blades comprising a front face 4, and a back face 5 mounted so that the front and back faces are axially parallel, with each of the faces having radially outer portions near R61 and radially inward portions near R79 with radii of curvature, such that at least portions of the front face have a lesser radius of curvature near R6.7 than the back face near R18.2, and the radially outer portions of the front face at R6.7 and of the back face at R6.7 have a lesser radius of curvature than the radially more inward portions of the front face at R18.2 and of the back face at R18.2. The radially inward portions of the front faces and of the back faces,

respectively comprise at least 30% of the radial extent of a turbine blade, while the radially outer portions of the front faces and back faces, respectively comprise at least 30% of the radial extent of the turbine blades. The radii of curvature of the radially inward portions are at least 50% greater than the radii of curvature of the corresponding radially outer portions of the front faces and back faces, respectively. The radius of curvature R18.2 of the radially inward portion is no more than about four times the radius of curvature R6.7 of the corresponding radially outer portion. The transition of the radii of curvature from the radially inward to the radially outer portion is in each case inherently located on a line connecting the centers of curvature of the respective radially inward and radially outer portion. The recitation in claim 1, lines 1-2 of "for driving rapidly rotating tools, particularly for the rotating disks and/or domes of paint-spraying apparatus" is a recitation of intended use as set forth above. Additionally, these limitations have not been given patentable weight because the recitation occurs in the preamble, as set forth above. Note that although Saeki is directed towards centrifugal fan blades, these blades are structurally and functionally equivalent to the claimed turbine blades and will function as turbine blades when driven by working fluid. Note also that the designation of the blade radially outer portion and the blade radially inward portion depends on the viewing perspective in the drawing figures. Looking from the periphery in figure 5 towards the central axis 22, the portion R79 is considered to be the blade radially inward portion while the portion R61 is considered to be the blade radially outward portion.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 11-13, as far as they are definite and understood, are rejected under 35 U.S.C. 103(a) as being unpatentable over Fujii 3,140,042. Fujii discloses a turbine wheel substantially as claimed as set forth above, with the length to radius ratio of the turbine blades being 75mm/80 mm, which is 93.75%.

However, Fujii does not disclose that the axial length of the turbine blades is at most 80% of the radial extent of the turbine blades (claim 11), and does not disclose that the axial length of the turbine blades is approximately 70% +/- 5% of the radial extent of the turbine blades (claims 12 and 13).

The recitation of the specific ratio of the axial length of the turbine blades to the radial extent of the turbine blades is a matter of choice in design. The ratio of the axial length of turbine blades to the radial extent of the turbine blades is known to be a result-effective variable which influences the efficiency, noise, and pressure output, for example. It would have been obvious at the time the invention was made to a person having ordinary skill in the art to select the ratio of the axial length of the turbine blades to the radial extent of the turbine blades to be a

specific value, such as at most 80% of the radial extent of the turbine blades, and/or as approximately 70% +/- 5% of the radial extent of the turbine blades, for the purpose of optimizing the efficiency, noise, and pressure output, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Claim 14, as far as it is definite and understood, is rejected under 35 U.S.C. 103(a) as being unpatentable over Fujii 3,140,042. Fujii discloses a turbine wheel substantially as claimed as set forth above, including the feature that in a section perpendicular to the axis, the connecting line of the radially inward edge and of the radially outer edge of a turbine blade is inclined relative to a radius vector to the inner edge of the turbine blade, this being such that the outer edge of the turbine blade is ahead of the inner edge in the direction of rotation, with the connecting line being inclined by about 30 degrees relative to the radius vector directed toward the inner edge of the turbine blade.

However, Fujii does not disclose that the connecting line is inclined by 2 to 15 degrees relative to the radius vector directed toward the inner edge of the turbine blade.

The recitation of the specific blade inclination relative to the radius vector directed toward the inner edge of the turbine blade is a matter of choice in design. The specific blade inclination relative to the radius vector directed toward the inner edge of the turbine blade is known to be a result-effective variable which influences the efficiency, noise, and pressure

output, for example. It would have been obvious at the time the invention was made to a person having ordinary skill in the art to select the blade inclination relative to the radius vector directed toward the inner edge of the turbine blade to be a specific value, such as from 2 to 15 degrees, for the purpose of optimizing the efficiency, noise, and pressure output, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Prior Art

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Chute is cited to show a turbine wheel with turbine blades comprising a front face, and a back face, mounted so that the front and back faces are axially parallel, with each of the faces having radially outer portions and radially inward portions with radii of curvature, such that at least portions of the front face have a lesser radius of curvature than the back face, and the radially outer portions of the front face and of the back face have a lesser radius of curvature than the radially more inward portions of the front face and of the back face. This reference could also have been applied as it anticipates at least claim 1, but is not applied at this time to avoid multiple rejections.

Hansinger, David, and United Kingdom Patent 2,190,606 are cited as English equivalents to foreign language documents cited by Applicant.

Baumann, Dickinson, Sedlacsik, and Graber are cited to show various atomizers with turbine blades.

Allowable Subject Matter

Claims 5-7, 15-18, and 19-20 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christopher Verdier whose telephone number is (571) 272-4824. The examiner can normally be reached on Monday-Friday from 10:00-6:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward K. Look can be reached on (571) 272-4820. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

C.V.
February 9, 2006

Christopher Verdier
Primary Examiner
Art Unit 3745